

## *Culeolus herdmani* Sluiter, 1904 (Ascidiacea, Tunicata) from the northwestern Australian continental slope with an overview of the genus

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**Abstract** – Thirteen specimens of *Culeolus herdmani* Sluiter, 1904 (Ascidiacea, Tunicata) taken at 3 locations on the northwestern Australian continental slope (between 408m and 550m and 14°16.8'S and 16°09.5'S) are the first records of this genus from Australian waters. The species is one of 7 *Culeolus* spp. recorded at depths of 1800m or less. The newly recorded specimens generally resemble the type specimen and others from the Philippines, Japan and New Caledonia, although there are some differences in the number of branchial folds, length of stalk, presence of a long ventral branchial tentacle and mid-ventral papillary crest and interruption of the postero-lateral papillary crest over the dorsal mid-line. Included in this account is a key to the species of the genus and a table summarising their distribution and characters

### INTRODUCTION

The genus *Culeolus* (Pyuridae, Stolidobranchia) was erected by Herdman (1881) for 5 species taken by HMS *Challenger* from depths of 4000 to 5798 m in the Pacific (off Japan, in the tropics and the South Pacific) and the Atlantic Oceans. The genus is characteristic of abyssal ascidians, having an open meshwork of longitudinal and transverse vessels in the branchial sac and lacking stigmata. All species have a narrow stalk that most often is long and wiry and is attached at the anterior end of the body as in other stalked forms (see Kott 1989). The branchial aperture is antero-dorsal and the atrial aperture a large transverse postero-dorsal opening. Most of the species in the genus have a crest of enlarged papillae around the posterior end of the body, sometimes enclosing the atrial aperture but in other species interrupted over the dorsal surface and terminating each side of the atrial aperture. As in other Pyuridae, branchial tentacles are branched, the branchial sac has 5 to 7 folds and the gut forms the usual loop and has liver lobules in the pyloric region. Gonads are relatively long, sometimes with the testis follicles divided into clumps on the mesial surface of the ovarian tube but occasionally the whole gonad divided into hermaphrodite blocks as in *Pyura* and *Microcosmus*. There are seldom more than 3 gonads per side. Occasionally one or more of the gonads on the left side of the body are outside the gut loop. Antero-posteriorly flattened languets are at the junctions of the transverse vessels along the dorsal mid-line.

The species in this genus are relatively uniform in external appearance. Distinctions often are based on the form of papillae both on the surface and in the postero-lateral papillary crest. Useful information

on species relationships can be obtained from the gonads, although in some cases these have not been described; and because relatively few specimens are available in most of the known taxa, variations in the number and arrangement of the gonads and their subdivisions are not well documented.

Unlike most abyssal species, *Culeolus* spp. generally have a relatively restricted known range, with few exceptions being known from either the northern or southern Atlantic or Pacific Oceans, the tropical Pacific or the Southern Ocean. The present species is known mainly from the continental slopes in the western Pacific. The only other species recorded only from slope locations are *C. gigas* Sluiter, 1904, *C. quadrula* Sluiter, 1904, and *C. thysanotus* Sluiter, 1904 from Indonesia; *C. caudatus* Monniot & Monniot, 1991 from off New Caledonia; *C. wyville-thomsoni* Herdman, 1881 from the South Pacific; and *C. sluiteri* Ritter, 1913 from off the Aleutians. All other species of the 21 known in this genus are recorded from 2000m or more (up to 7000m in the Kurile Trench: *C. robustus* Vinogradova, 1970).

### TAXONOMY

#### *Culeolus herdmani* Sluiter, 1904

*Culeolus herdmani* Sluiter, 1904: 105. Van Name, 1918: 83. Tokioka, 1953: 289. Millar, 1975: 319. Monniot & Monniot, 1991: 421.

#### Distribution

#### New Records

Western Australian (NW of Collier Bay, 14°7.5'S;